IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) An electronically controlled valve assembly, comprising:

a valve body having a valve seat, and at least two gas inlets and one gas outlet below the valve seat;

a piston movable within the valve body above the valve seat between an open position and a closed position, the piston being configured to seal at least one of the at least two gas inlets when the piston is moved to ~~its~~ the closed position;

a solenoid coil for generating a magnetic field; and

a magnetic member, the magnetic member and the solenoid coil moving relatively away from each other when the solenoid coil is electromagnetically induced, such relative movement moving the piston between ~~its~~ the open and closed positions.

2. (Original) The valve assembly of claim 1, wherein the gas outlet is in fluid communication with a substrate processing chamber.

3. (Original) The valve assembly of claim 2, wherein:
the position of the solenoid coil is fixed relative to the piston; and
the magnetic member mechanically acts against the piston to move the piston.

4. (Original) The valve assembly of claim 3, wherein the magnetic member is attached to the piston.

5. (Original) The valve assembly of claim 2, wherein:
the position of the solenoid coil is fixed relative to the piston; and
the magnetic member magnetically acts against the piston to move the piston.

6. (Original) The valve assembly of claim 2, wherein:
the position of the magnetic member is fixed relative to the piston; and
the solenoid coil mechanically acts against the piston to move the piston.

7. (Original) The valve assembly of claim 6, wherein the solenoid coil is attached to the piston.

8. (Original) The valve assembly of claim 2, wherein:
the position of the magnetic member is fixed relative to the piston; and
the solenoid coil magnetically acts against the piston to move the piston.

9. (Previously Presented) The valve assembly of claim 2, wherein the at least two gas inlets include a reactant inlet and a purge gas inlet.

10. (Currently Amended) The valve assembly of claim 9, wherein the valve seat is configured to permit fluid communication between the purge gas inlet and the at least one outlet even when the piston is in ~~its~~ the closed position.

11. (Currently Amended) The valve assembly of claim 2, wherein the piston comprises an elongated shaft, and a diaphragm at an end of the shaft for sealing against the at least one gas inlet when the piston is in ~~its~~ the closed position.

12. (Original) The valve assembly of claim 11, wherein:
the piston further comprises an upper shaft, and a lower valve rod coupled to the upper shaft; and
the diaphragm is disposed at an end of the valve rod opposite the upper shaft.

13. (Currently Amended) The valve assembly of claim 11, wherein the diaphragm comprises:
an upper diaphragm member coupled to the shaft; and

a lower diaphragm member for sealing against the at least one gas inlet when the piston is in ~~its~~ the closed position.

14. (Original) The valve assembly of claim 13, wherein the lower diaphragm has a thickness at least approximately 25% greater than a thickness of the upper diaphragm.

15. (Original) The valve assembly of claim 2, wherein the piston has a stroke length of about 0.2 mm.

16. (Original) The valve assembly of claim 2, wherein the valve seat is fabricated from a material selected from the group including PCTFE, PTFE, and combinations thereof.

17. (Original) The valve assembly of claim 12, further comprising a diaphragm position indicator.

18. (Original) The valve assembly of claim 2, wherein the solenoid coil is magnetically induced when it receives current through a control line.

19. (Original) The valve assembly of claim 2, wherein current is generated to the solenoid coil by a power driver.

20. (Original) The valve assembly of claim 19, wherein the power driver delivers current to the solenoid coil in response to signals from a programmable logic controller.

21. (Original) The valve assembly of claim 20, wherein the programmable logic controller is controlled by a main controller.

22. (Currently Amended) An electronically controlled valve assembly, comprising:

a valve body having a valve seat, and a gas inlet and a gas outlet below the valve seat, the gas inlet being in fluid communication with a reactant source and a purge gas source, and the gas outlet being in fluid communication with a substrate processing chamber;

a piston movable within the valve body above the valve seat between an open position and a closed position;

a diaphragm disposed at an end of the piston, the diaphragm being configured to seal the at least one gas inlet when the piston is moved to ~~its~~ the closed position;

a biasing spring acting on the piston and connected diaphragm;

a solenoid coil for generating a magnetic field; and

a magnetic member, the magnetic member and the solenoid coil moving relatively away from each other when the solenoid coil is electromagnetically induced, such relative movement selectively moving the piston between ~~its~~ the open and closed positions.

23. (Original) The valve assembly of claim 22, wherein the piston and connected diaphragm are biased by the spring in the closed position.

24. (Original) The valve assembly of claim 22, wherein:
the position of the solenoid coil is fixed relative to the piston; and
the magnetic member mechanically acts against the piston to move the piston.

25. (Original) The valve assembly of claim 22, wherein the piston and connected diaphragm are biased by the spring in the open position.

26. (Original) The valve assembly of claim 22, wherein the piston has a stroke length of about 0.2 mm.

27. (Currently Amended) A method of injecting a reactant into a substrate processing chamber, comprising the steps of:

placing a reactant gas source in fluid communication with an electronically controlled valve assembly, the valve assembly comprising:

a valve body having a valve seat, a reactant inlet, a purge gas inlet, and a gas outlet,

a piston movable within the valve body above the valve seat between an open position and a closed position, the piston being configured to seal the reactant inlet when the piston is moved to ~~its~~ the closed position,

a solenoid coil for generating a magnetic field, and

a magnetic member, the magnetic member and the solenoid coil moving relatively away from each other when the solenoid coil is electromagnetically induced, such relative movement selectively moving the piston between ~~its~~ the open and closed positions; and

directing a current to the solenoid coil to magnetically induce the coil, causing the piston to move relative to the valve seat.

28. (Previously Presented) The method of claim 27, wherein the step of directing a current to the solenoid coil causes the piston to move off of the valve seat, allowing one or both of a reactant gas or a purge gas to move through the valve seat and the gas outlet.

29. (Previously Presented) The method of claim 27, wherein the step of directing a current to the solenoid coil causes the piston to move onto the valve seat, preventing one or both of a reactant gas or a purge gas from flowing through the valve seat and the gas outlet.

30. (Previously Presented) The method of claim 27, further comprising the step of:

discontinuing the directing of current to the solenoid coil, causing the piston to seal against the valve seat, and preventing one of a reactant gas or a purge gas from flowing through the valve seat and the gas outlet.

31. (Original) The method of claim 27, wherein:
the position of the solenoid coil is fixed relative to the valve body; and
the magnetic member mechanically acts against the piston to move the piston.

32. (Original) The method of claim 31, wherein the magnetic member is attached to the piston.

33. (Original) The method of claim 27, wherein:
the position of the solenoid coil is fixed relative to the valve body; and
the magnetic member magnetically acts against the piston to move the piston.

34. (Original) The method of claim 27, wherein:
the position of the magnetic member is fixed relative to the valve body; and
the solenoid coil mechanically acts against the piston to move the piston.

35. (Original) The method of claim 34, wherein the solenoid coil is attached to the piston.

36. (Original) The method of claim 27, wherein:
the position of the magnetic member is fixed relative to the valve body; and
the solenoid coil magnetically acts against the piston to move the piston.

37. (Previously Presented) The method of claim 27, wherein:
the piston further comprises an upper shaft and a lower valve rod coupled to the upper shaft; and
a diaphragm is disposed at an end of the valve rod opposite the upper shaft.

38. (Currently Amended) The valve assembly of claim 37, wherein the diaphragm comprises:
an upper diaphragm member coupled to the shaft; and

a lower diaphragm member for sealing against the at least one gas inlet when the piston is in ~~its~~ the closed position.

39. (Original) The valve assembly of claim 38, wherein the lower diaphragm has a thickness at least approximately 25% greater than a thickness of the upper diaphragm.

40. (Original) The valve assembly of claim 38, wherein the piston has a stroke length of about 0.2 mm.

41. (Original) The valve assembly of claim 38, wherein the valve seat is fabricated from a material selected from the group including PCTFE, PTFE, and combinations thereof.